

## A complex function theory for Mellin Analysis and applications to sampling

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The aim of this research is to extend in a simple way the well-known Paley–Wiener theorem of Fourier Analysis, which characterizes the so-called bandlimited functions, to the setting of Mellin transform. In order to do that, we introduced in these last years a notion of polar analytic function [1], which provides a simple way of describing functions that are analytic on a part of the Riemann surface of the logarithm. Applications to various topics of Mellin Analysis are developed, in particular sampling type theorems and quadrature formulae (for a survey see [2]).

[1] Bardaro, C., Butzer, P.L., Mantellini, I., Schmeisser, G.: Development of a new concept of polar analytic functions useful in Mellin analysis. *Complex Var. Elliptic Equ.* **64**(12), 2040–2062 (2019)

[2] Bardaro, C., Butzer, P.L., Mantellini, I., Schmeisser, G.: Polar-analytic functions: old and new results, applications. Pre-print submitted, (2021)